CLAIMS

What is claimed:

1. A clutching arrangement for transferring power from an output shaft of an engine to an input shaft of a manual transmission, the clutching arrangement comprising:

a housing;

an electrically controlled clutch mounted in the housing, the clutch for selectively coupling and uncoupling the output shaft and the input shaft; and

a clutch synchronizer disposed between the input shaft and the output shaft for synchronizing a speed of the input shaft with a speed of the output shaft.

2. A clutching arrangement for transferring power of claim 1, wherein the clutch is a magneto rheological fluid (MRF) clutch having MRF which is activated for selective coupling of the input shaft to the output shaft.

3. A clutching arrangement for transferring power of claim 1, wherein the clutch synchronizer is a friction brake that is selectively and adaptively applied to slow down the output shaft to equalize its speed with the input shaft.

4. A clutching arrangement for transferring power of claim 1, wherein the synchronizer is a magneto rheological fluid brake that is selectively and adaptively applied to slow down the output shaft to equalize its speed with the input shaft.

5. A clutching arrangement for transferring power of claim 1 further comprising an Electronic Control Module (ECM) for coordinating and synchronizing operation of the clutch and synchronizer.

6. A clutching arrangement for transferring power of claim 1, wherein the clutch is automatically disengaged when a brake pedal is depressed.

7. The clutching arrangement for transferring power of claim 5, wherein the ECM is operable to automatically control torque just above the

torque required to drive an output of the clutch at same speed as the input shaft under normal operating conditions.

8. The clutching arrangement for transferring power of claim 7, wherein the ECM operates to permit clutch torque transfer rates in response to a driver selection.

9. A clutching arrangement for transferring torque between a first drive member and a second drive member, the clutching arrangement comprising:

an input assembly for coupling to the first drive member;

an output assembly for coupling to the second drive member, the output assembly selectively coupled to the input assembly; and

a magneto rheological fluid (MRF) disposed between the input assembly and the output assembly, the MRF operable to normally permit relative rotation between the input assembly and the output assembly and operable upon activation to selectively couple the input assembly and the output assembly.

10. The clutching arrangement for transferring power of claim 9, further comprising at least one coil for activating the MRF.

11. A clutching arrangement for transferring power of claim 10, further comprising:

a first sensor for monitoring an output speed of the first drive member;

a second sensor for monitoring an input speed of the first and second drive member;

a control arrangement for comparing the output speed with the input speed and accordingly varying a current delivered to the at least one coil.

12. A method of selectively transferring torque between a first member and a second member, the method comprising the steps of:

providing a clutching arrangement having an input assembly coupled to the first member and an output assembly coupled to the second member, the clutching arrangement additionally having MRF disposed

between the input assembly and the output assembly, the MRF operable to normally permit relative rotation between the input assembly and the output assembly and operable upon activation to selectively couple the input assembly and the output assembly; and

activating the MRF to selectively couple the input assembly and the output assembly.

13. The method of claim 12, further comprising the steps of:

providing at least one coil; and

delivering an electrical current to the at least one coil to activate the MRF.

14. The method of claim 12, further comprising the step of varying the current delivered to the at least one coil.

15. The method of claim 14, further comprising the steps of:

comparing an output speed of the first drive member with an input speed of the second drive member; and

varying the current delivered to the at least one coil as a function of the compared value of the output speed and the input speed.

16. The clutching arrangement for transferring power of claim 1, further comprising a driver controlled switch that is actuated upon manually shifting between transmission ratios.

17. The clutching arrangement for transferring power of claim 16, further comprising a shift stick, the switch located on the shift stick.

18. A clutching arrangement for transferring power of claim 1, further comprising a slip ring assembly for providing electric connection between a vehicle battery and the at least one coil.